SCOPE OF SERVICES

MARICOPA ASSOCIATION OF GOVERNMENTS (MAG)

HIGH CAPACITY TRANSIT PLAN

PROJECT UNDERSTANDING

Commuter rail service has a number of features that may allow it to play an important role in providing an additional transportation option that complements other transit and roadway modes. A study is needed to evaluate the possible use of existing railroad corridors for commuter rail, estimate the costs and benefits of this service, and assess how it would interact with other modes. In some corridors, the operation of conventional commuter rail may encounter significant obstacles. Other high capacity transit technologies, such as bus rapid transit, elevated rail (including monorail), or subways, may be more appropriate in these corridors. There may still be other areas of the MAG region without railroad rights-of-way where new high capacity transit may be warranted. To pursue these opportunities for commuter rail and high capacity transit in the region, a project is being initiated in the MAG FY 2002 Unified Planning Work Program to conduct a Regional High Capacity Transit Study.

MAG is currently developing a Regional Transportation Plan (RTP) that will replace the existing Long Range Transportation Plan. The RTP will provide a policy framework to guide transportation investments over the next twenty years. As a part of the RTP, performance measures will be developed to provide a balanced multi-modal transportation system that meets regional goals and objectives. The planning efforts for the High Capacity Transit Plan developed in this work scope will be integrated with the development of the RTP.

The objectives of this study are to:

1. Conduct a feasibility analysis of commuter rail along existing rail corridors.

2. Identify alternative high capacity transit service concepts for existing rail corridors where commuter rail is not feasible, such as light rail, express bus service, bus rapid transit or elevated rail.

3. Identify new alternative high capacity transit service corridors.

4. Using the results of 1 through 3, above, create a regional high capacity transit system plan.

5. Develop an action/implementation plan to identify roles and responsibilities.

I. TASKS TO BE PERFORMED FOR THE STUDY

The purpose of this section is to outline the major tasks required to be performed by the CONSULTANT in order to produce the needed analyses and deliverables to MAG.

PART I: GENERAL TASKS

Task 1: Refine the Work Scope

Additional refinements in the scope of work may be necessary during the contract period. The CONSULTANT may refine the scope of work, based upon professional experience, new information, or test results. Revisions to the Scope of Work will be determined jointly by the CONSULTANT and the MAG project manager. A detailed project schedule, including level of coordination with other transit planning efforts, shall be outlined in the revised scope of work. In the event that a revision is needed, the CONSULTANT will furnish the MAG project manager with one copy of an initial revised Scope of Work and Project Schedule, including a revised labor/dollar allocation and project task cost breakdown, for internal review. The CONSULTANT will incorporate any comments from MAG into a final revision and supply one copy to MAG.

Task 2: Develop Public and Agency Involvement Plan

The CONSULTANT will develop a plan for public and agency involvement with assistance from the MAG Project Manager. The MAG Transportation Review Committee will provide oversight for the development of the Plan with the assistance of an Agency Oversight Team (AOT). The AOT will be comprised of project partners including representation from MAG member agencies, ADOT, RPTA, staff members from the Central Phoenix/East Valley Rail Project and railroad owners and operators. The public involvement plan (PIP) should identify key milestones for consultation, approximate timing and methods for generating input. Innovative and effective efforts to maximize resources in holding meetings are encouraged, such as joint meetings, attending meetings of interested groups at pre-established times and places, integrating with the existing MAG, RPTA and ADOT public involvement process, etc. The PIP shall strive to involve affected and interested persons and agencies early in and throughout the process, and define ways to involve persons directly affected by potential alternative alignments. The PIP shall involve agencies responsible for implementing the final Plan, especially railroad and transit owners and operators. The PIP shall include dialogue with the Union Pacific and Burlington Northern Railroad companies, and other railroad interests, such as Amtrak, to document the concerns of using existing railroad rights-of-way for commuter rail. The PIP shall be linked with the public and agency involvement process underway in the development of the MAG Regional Transportation Plan.

Stakeholders will be identified with the assistance of the MAG Project Manager, the MAG Transportation Review Committee, and the AOT. The developed list(s) of stakeholders will include names, addresses, phone numbers, fax numbers and e-mail addresses. The CONSULTANT will consult with staff from MAG, ADOT, and RPTA, staff of MAG member agencies, including intergovernmental liaisons, and staff from the Central Phoenix/East Valley Light Rail Transit Project to identify other potential stakeholders to be consulted in developing the plan, and to provide general comments on the draft PIP. The CONSULTANT shall provide resources to maintain the stakeholder list and to fully implement the developed PIP.

Task 3: Review Prior Studies and Conduct Review of High Capacity Transit Characteristics

The CONSULTANT shall review prior studies and regional, state and federal policies regarding high capacity transit. The CONSULTANT will conduct a review of the characteristics of commuter rail and other high capacity transit modes in other urban areas, including equipment, facilities and operations. The review shall include information on vehicles, capacity, speeds, frequencies, hours of operation, fares, and support facilities (including park and ride lots, supporting bus service, and maintenance and storage facilities). Commuter rail shall be compared and contrasted with other high capacity transit modes, such as light rail, express bus, bus rapid transit, and elevated rail. The review will assemble technical, cost and other data on technologies that might be considered and highlight key factors, relationships, synergies and conflicts that accompany different technology and right-of-way choices and their ability to respond to transportation, development and environmental objectives. The review shall also consider how improved user amenities, such as fiber optic connections in vehicles and more spacious seating, improve the attractiveness of high capacity transit modes.

Task 4: Identify and Refine Thresholds for Commuter Rail and Other High Capacity Transit Operation

The CONSULTANT shall determine characteristics conducive to commuter rail and other high capacity transit options. These characteristics shall include typical trip patterns, travel time, employment and residential densities, commute distance and station spacing. Thresholds will be used to develop a baseline to assess commuter rail and/or other high capacity transit options.

Results of Task 3 will provide general information on the capacities and other characteristics of various high capacity modes. In this task, thresholds will be developed based on an examination of existing high capacity systems and the factors contributing to successful service, including improved user amenities and technological advances. The information to be compiled for commuter rail/high capacity systems in other cities will include system descriptions (system and service area definition, population, level-of-services, etc.), ridership, cost and performance data. The information will be summarized to allow comparisons between the systems, leading to the establishment of factors needed to achieve a successful system. The thresholds will be set and the alternatives that fall beneath these thresholds will be eliminated from further detailed analysis.

The CONSULTANT will compare the identified thresholds with current and projected travel characteristics in the MAG region to compare regional travel characteristics with successful commuter rail and high capacity transit systems in other urban areas. Opportunities and constraints will be identified and analyzed. The application of patronage thresholds will require preliminary estimates of ridership, but at a broad level of detail. Demand forecasts from the MAG transportation model will be used to develop corridor profiles to describe the competitive context of transit in each corridor in relation to other transportation infrastructure and services in the corridor: origin-destination patterns, key market segments and travel characteristics; and transportation needs in each corridor and prospects for improved transit. The analysis will define the gap between transportation problems and existing supply, unmet transit needs and other strategic considerations, which will greater assist in the determination of demand thresholds. It will provide a basis for justifying enhanced transit in the MAG region and

for selecting the corridors to be included in the various commuter rail and high capacity transit networks in Tasks 7 and 11.

After this analysis, the CONSULTANT will refine the threshold criteria to develop criteria to assess commuter rail and other high capacity transit alternatives. Stakeholders shall be included in the process for developing and refining criteria. Potential criteria could include: impacts on the fixed route and planned light rail transit systems, integration with other transportation system elements, land use impacts and compatibility with land use objectives, accessibility, transit system efficiency, ridership, impacts to roadway mobility and congestion, willingness of rail owner/operator to allow commuter rail, revenue and financing issues, and impacts on Title VI communities. The distribution of population by income groups and auto ownership levels will be examined to determine whether there are ay potential environmental justice issues. The criteria will include the development of performance measures and other factors for evaluation of alternatives.

As part of the constraints analysis, the CONSULTANT shall examine how public acquisition of rail right-of-way could address operations issues and liability constraints. Public purchase options should also examine how freight operations could be accommodated, such as leaseback of freight operating rights, contracting with a short line freight operator for interchange service, etc. Public acquisition of right-of-way could address several issues including tort liability, operational control, and public reluctance to finance capital improvements on private property. Models of governance for successful commuter rail systems shall also be identified.

As a part of this Task, the CONSULTANT shall review existing land use plans of MAG member agencies to assess whether current and project land use patterns are conducive to high capacity transit.

Task 5: Develop Travel Demand Modeling Methods and Identify Socioeconomic Forecast Scenarios

The CONSULTANT will develop commuter rail and other high capacity transit travel demand modeling methods. This model shall be used to project short and long term ridership of commuter rail. The CONSULTANT shall allow for the analysis of the potential population served by commuter rail and other high capacity transit services to assure that Title VI and environmental justice concerns are addressed. Travel demand modeling shall consider the effect of inter-modal transfers on project ridership, such as bus to train, car to train, walk to train, train to bus or light rail, etc.

To provide a technical basis for analyzing transportation and air quality plans, MAG maintains a comprehensive set of models to systematically project employment and population, traffic demand, and air quality. These models allow both the projection of current trends and the evaluation of planning alternatives. MAG transportation model assignments will be available to the CONSULTANT. As part of this task, the CONSULTANT shall review regional socioeconomic data bases, identify forecast scenarios and prepare data for use in the study process. MAG socioeconomic and land use data will also be available. This data is available by Traffic Analysis Zone (TAZ) for 2000, 2010, 2020, 2025 and 2040. The MAG travel demand models forecast roadway and transit use throughout the metropolitan area. Key outputs of these models include projections of average daily traffic, peak hour traffic trips by purpose and mode, traffic volume to roadway capacity ratios, level of service at intersections, delay and travel time.

GIS information on existing land use and land use plans is also available. The primary output of the MAG socioeconomic models is projections of population, households, land use and employment by small area.

PART II: COMMUTER RAIL ANALYSIS

Task 6: Inventory Facility and Operational Characteristics and Issues of Existing Rail Corridors in the Region

Existing rail facilities in the MAG region shall be identified, along with their operational characteristics. Existing right-of-way widths shall be examined since this factor could affect the potential for double tracking within existing right-of-way. The inventory shall include identification of needed track condition and its acceptability for commuter rail service, as well as stations and an assessment of the condition of existing stations. The inventory shall include the need for system refreshments (steel and tie replacements, signal and grade crossing improvements) and capacity improvements (passing sidings) that will be needed to safely and efficiently move passenger trains within a freight railroad environment. The inventory shall also include current and projected levels of freight service in existing corridors, the number of trains and freight cars per day by mile segments of track, and locations of rail yards, piggyback operations and rail spurs. Potential issues relating to shared use of rail corridors between commuter service and freight and intercity passenger rail service shall be identified.

With the assistance of key stakeholders, issues associated with the provision of commuter rail services in rail corridors where current freight activity is high or is projected to increase that may impact the feasibility of commuter rail shall be identified. The issue of shared use between commuter rail and freight and intercity passenger service, impacts of additional traffic on operations, maintenance and capital costs for rail owners, the negotiation of access rights, and the potential purchase of the track by a public entity in the MAG region will be explored. Grade safety crossing issues, noise impact issues and other neighborhood or adjacent property impacts shall be addressed. With the assistance of key stakeholders, potential solutions to these issues will be identified. Traffic impacts and delays associated with commuter rail service should also be identified.

Task 7: Assess Feasibility of Commuter Rail Service in Existing Corridors and Identify Feasible Commuter Rail Corridors

The feasibility of commuter rail in existing rail corridors will be established using the threshold criteria, the generalized corridor flows and a review of the operational characteristics in each of the existing corridors (developed in Task 4) and the socioeconomic scenarios developed in Task 5. Commuter rail alternatives shall be developed at a level of detail sufficient to estimate ridership, capital costs, operational costs, and provide information for alternatives evaluation. Costs shall include support facilities and maintenance and storage facilities. Transfer centers, hours of operation and train frequency shall also be considered. The objective of this task is to identify existing rail corridors that are feasible for commuter rail, and existing rail corridors that are not feasible for commuter rail. Commuter rail shall be compared with other feasible high capacity transit options. Pedestrian and motorist safety shall be addressed, including consideration of the safety and operations of commuter rail across rail/highway crossings. Potential impacts on land use, economic development and adjacent neighborhoods shall

be identified. Options to make commuter rail more feasible should also be explored. For example, relocating yards and piggyback operations measures to shift freight operations to possibly free-up rail capacity for commuter service should be explored.

As a part of this Task, the CONSULTANT shall consider existing land use plans of MAG member agencies to assess whether current and project land use patterns are conducive to high capacity transit. Potential changes to local plans that would enhance high capacity transit should be identified and addressed as part of the feasibility analysis. The CONSULTANT shall also analyze the potential population served by commuter rail to assure that Title VI and environmental justice concerns are addressed.

Task 8: Define Regional Commuter Rail Network and Preliminary Operating Characteristics

Based on the results of prior tasks, the CONSULTANT shall identify a regional commuter rail network and preliminary operating characteristics of the commuter rail. The stakeholders and agencies identified in Task 2 shall have input on the operating characteristics of the commuter rail system. In order to achieve system continuity of the proposed system, short sections of new commuter rail corridor may be identified in this Task. Potential termini of the system shall be identified, along with rights-of-way and the costs identified in Task 7. General locations for maintenance and storage facilities, additional park and ride lots, and transfer stations between commuter rail and other modes shall be identified. General operating characteristics, such as hours and frequency of service, will be identified. Successful approaches to governance for the commuter rail system in other areas shall be identified.

Task 9: Estimate Commuter Rail System Ridership and Potential Revenues; Estimate Operating and Capital Costs

Based on the operating characteristics identified in Task 8, commuter rail ridership and potential revenues will be identified.

Operating and capital costs of having commuter rail on feasible corridors will be determined. The estimate of operations costs shall include the provision of commuter rail, additions to the planned bus system to support commuter rail, support facilities, and maintenance of facilities and vehicles. Other factors that could affect operations costs may include fees for access rights and indemnification, and maintenance plans. Capital costs will depend on factors such as hours of operation, train frequency, and the need for additional park and ride lots. As part of capital costs, track rehabilitation, ancillary improvements costs, associated equipment, cost of upgrading existing transfer sites and consideration of the role of the regional ITS system in commuter rail operations.

For each segment of the Corridor, the CONSULTANT will apply representative unit costs, with pre-engineering consideration of major infrastructure requirements. Estimates for the individual project elements, by segment, will be summed for several major expense categories: civil works, tracks and signaling, rail vehicles, support systems, right-of-way, management and engineering, and contingencies.

Planning-level operating and maintenance cost methods will be derived to compare the alternatives. These will be based on the forecast ridership loads and other service-related factors and unit-cost factors from existing transit agencies, comparable in level of detail with the conceptual service plan for the Corridor.

PART III: REGIONAL HIGH CAPACITY TRANSIT CORRIDOR ANALYSIS

Task 10: Identify Alternative High Capacity Transit Service Concepts

Using the results of prior tasks, the CONSULTANT will identify alternative high capacity transit service concepts for existing rail corridors not feasible for commuter rail. Important criteria in developing these transit service concepts are the availability of width in these corridors and the potential continuity of these alternative services through extensions to other corridors. Existing non-rail right-of-way, such as freeway right-of-way and electric transmission line corridors, that has a potential for shared use with high capacity transit shall be considered as part of this analysis to help develop a functional high capacity transit system. An important issue to address will be whether high capacity transit service can be provided on existing rail lines using modes such as Bus Rapid Transit (BRT) or Light Rail Transit (LRT) since numerous grade separations may require vertical separation, particularly where they are close to major road intersections.

As a part of this task, the CONSULTANT will review prior and ongoing studies, including but not limited to the Tempe/Scottsdale Major Investment Study and the Chandler Major Investment Study, and recommendations on new regional high capacity transit corridors. Potential additional new high capacity transit corridors to meet projected travel demand may also be identified as part of this task. Alternative high capacity transit service concepts (light rail, elevated rail, bus rapid transit, etc.) applicable to the new corridor will be identified.

The service concepts will be developed to address the transportation corridor needs and deficiencies identified in Task 4, which includes flows in various corridors as projected by the MAG model. This process will examine each corridor and determine appropriate transit services that may be considered based on these needs and considering the characteristics of the corridor (land use , traffic, on-street parking, transit), constraints and projects of potential demand. Each service alternative will include conceptual descriptions of the technology of each system, the general alignment and corridors of operation, station spacing and locations and an overall operating strategy. In addition, supportive transit elements such as buss feeder systems and integration with commuter rail and other transit element swill be considered at the conceptual level in terms of their interactions with the high capacity transit network and the proposed LRT system in the MAG region.

Task 11: Refine Threshold and Performance Measures; Estimate Ridership, Operations, Maintenance and Capital Costs

The CONSULTANT shall refine the threshold and performance measures developed for high capacity transit modes created in Task 4 for their applicability to the alternative services identified in Task 11. Ridership and operating and capital costs of the alternative high capacity transit services identified in Task 10 will be determined. Support facilities and maintenance needs shall be incorporated into the cost estimates. The evaluation of the alternative service concepts should consider the disruption caused to the street network and additional costs to retrofit existing signal systems.

Task 12: Evaluate Alternatives; Recommend Feasible High Capacity Transit Options

The CONSULTANT will evaluate alternatives identified in Task 10 with the refined performed measures developed in Task 11. The evaluation of alternatives shall consider the relationship of the proposed alternatives with other transit modes, such as light rail, express bus and local bus. The evaluation of alternatives shall consider the relationship of the proposed alternatives to land use plans. Potential changes to land use plans that would enhance high capacity transit can be addressed as part of this task. An important consideration is the compatibility of modal options with the existing and planned transit system, and the ability to integrate alternative technologies into an efficient and effective regional transit system.

The CONSULTANT shall also analyze the potential population served by high capacity transit services to assure that Title VI and environmental justice concerns are addressed.

A systematic process will be used to assess each alternative and describe and quantify, where possible, the implications of each alternative using the evaluation criteria. Tables will be prepared to present and summarize these implications and a matrix-type analysis will be presented comparing the alternatives in terms of qualitative statements (e.g. good, fair, poor), graphics (e.g. shaded circles) and/or quantitative estimates (e.g. costs, level of service, etc.) The evaluation matrices will be described and interpreted in accompanying text, focusing on major trade-offs among the network options. For example, the network coverage and estimated ridership levels achievable with different levels of investment will be described in relation to operating costs, traffic level of service, and economic implications of the various options. Based on this evaluation, lines will be identified for a region-wide system of high capacity transit.

PART IV: REGIONAL HIGH CAPACITY TRANSIT SYSTEM PLAN

Task 13: Identify an Integrated High Capacity Transit Network and Define Preliminary Operating Characteristics

Based on the results of prior tasks, the CONSULTANT shall identify an integrated high capacity transit network and preliminary operating characteristics of the high capacity transit service. The stakeholders and agencies identified in Task 2 shall have input on the operating characteristics of the proposed service. The first step of this task will be to identify the major goals, in performance terms, of the high capacity transit network. Areas to be addressed include: overall and corridor modal split objectives; support for the regional economy and major activity centers; creation of balance and flexibility in the regional transportation network; and integration with other transit systems and elements to provide an effective family of transit services throughout the region. These goals will consider physical, operational, environmental and fiscal constraints.

Parts II and III of this work scope will define the preferred commuter rail and other high capacity transit services. Building on these findings and technical analysis, further refinements to the conceptual network will be considered. Special attention will be devoted to the level of coverage provided by the network (i.e. number and extent of corridors served) in relation to the required level of investment and estimated ridership levels. The supporting analysis will provide any necessary updates to previously defined operational and/or service considerations.

Drawing upon the results of the above, integrated networks will be developed showing the corridors covered and conceptually describing commuter rail/high capacity transit in each

corridor in the following terms: typical cross sections; typical station concepts and related urban design elements; traffic and transit operational considerations; and transit feeder systems. It will be particularly important to identify feeder system relationships to demonstrate how the network serves the entire study area in an integrated manner. In addition, Potential termini of the system shall be identified, along with rights-of-way and the costs identified in Task 7. General locations for maintenance and storage facilities, additional park and ride lots, and transfer stations between commuter rail and other modes shall be identified. General operating characteristics, such as hours and frequency of service, will be identified.

The integrated network will also include a preliminary discussion of various policies and requirements to support the plan: land use/urban design, traffic/transit, institutional considerations and funding considerations.

Task 14: Estimate Ridership and Potential Revenues; Estimate Operating and Capital Costs

Based on the operating characteristics identified in Task 13, estimated ridership and potential revenues will be identified. Operating and capital costs of the high capacity transit network will be defined. The estimate of operations costs shall include the provision of high capacity transit service, additions to planned support transit services, such as neighborhood circulators, support facilities, maintenance facilities and plans, and vehicles. Capital costs will depend on factors such as hours of operation, train frequency, and the need for additional park and ride lots. As part of capital costs, track rehabilitation, ancillary improvements costs, associated equipment, cost of upgrading existing transfer sites and consideration of the role of the regional ITS in high capacity transit operations.

Task 15: Develop Implementation Strategies and Action Plan

The implementation strategy will include broad service strategies for the next five- and ten-year time frames, the types of high capacity transit services and associated transit priority schemes that should be considered, traffic improvement and mitigation measures, and the anticipated impacts of these strategies. Planning level capital and operating costs will be prepared to help assess the cost-effectiveness of the various strategies along with budgetary implications. Recommended priorities, phasing and costing by corridor will be presented in the following categories: immediate commuter rail and high capacity transit improvements (identifying any supportive short-term rail initiatives); high priority infrastructure-based solutions; immediate actions or policies to protect future options; high potential opportunities requiring institutional/policy change.

The CONSULTANT shall identify potential partnerships with stakeholders, public agencies and other interested parties. Potential joint ventures for economic development which may help offset infrastructure costs should be explored. The implementation strategy and action plan shall include options for addressing financing, operations, maintenance and capital costs, and phasing recommendations. Integration of commuter rail with existing and proposed freight operations shall be considered in the action plan. Issues, opportunities and constraints identified in prior tasks shall be summarized. Potential solutions to issues and constraints shall be identified. Successful approaches to governance shall also be addressed in this task, as well as possible approaches to preserving rail corridors proposed for abandonment.

A step-by-step action plan will be developed for the first three years, outlining the specific timing, responsibilities, operational/coordination issues between agencies, costs to implement, policy/bylaw requirements to implement and interactions with other activities. It is important that the short-term solutions are implementable, realistic and contribute to the achievement of the longer range vision.

High capacity transit services may be eligible for federal funding, subject to satisfying various criteria at the local level. For this reason, proposed transit alternatives will be compared against the Federal Transit Administration's New Starts Criteria for federal funding, and further work or studies needed to meet these requirements will be identified.

II. DELIVERABLES

The principal work products of this project are the five working papers, workshops and meetings as outlined in the PIP, and the Final Report. It is important to note that the CONSULTANT name or logo should not appear on the cover page of any document submitted to MAG; however, these may be included on subsequent pages. In preparing the working papers, it is expected that the CONSULTANT will first provide one (1) unbound copy and one (1) electronic copy of the initial draft document to MAG for internal review. The CONSULTANT will incorporate comments from the internal review into a revised working paper and submit one (1) unbound copy and (1) electronic copy for external review within two weeks of receiving MAG comments. The CONSULTANT will then address or incorporate all comments resulting from the external review and submit five (5) copies of the final working paper and (1) electronic copy to MAG.

Copy ready quality of all deliverables are required. Copies of all drafts and final papers and reports must also be delivered in electronic format (standard Corel or Microsoft office software). Copies must also be supplied in Adobe Acrobat portable document format (.pdf files), to facilitate distribution for comment.

The CONSULTANT will allow sufficient resources to meet with the MAG project manager as necessary and all activities identified in the PIP developed in Task 2. In addition to public meetings as identified in the PIP, there may be periodic updates to the MAG Transportation Review Committee (up to six), periodic updates to the MAG Management Committee (up to three), and presentations to the MAG Regional Council (up to three). Additional meetings shall be budgeted for in the public involvement plan as well, including periodic updates (up to eight) to the Valley Metro Operations Staff, the Agency Oversight Committee of the Central Phoenix/East Valley Light Rail Transit Project, and the RPTA Board of Directors.

The CONSULTANT will provide to MAG a draft copy of all materials to be presented at the workshops and meetings for review and comment at least three business days prior to the scheduled meeting. Comments received from MAG will be incorporated into the presentation materials prior to the presentation. The CONSULTANT will provide MAG with paper copies of all materials (e.g. slide shows) presented at the workshops and meetings. Slide presentations for the workshops and meetings should be prepared in Microsoft PowerPoint or Corel Presentations format.

All work products created during the course of this project become the property of MAG. Work products include, but are not limited to, written reports, graphic presentations, spreadsheets, databases, data files, computer programs, and support documentation. All Working Papers shall include an executive summary.

1. Working Paper 1: Project Schedule and Public Involvement Plan (one initial administrative draft in electronic and hard copy format for MAG review; and one electronic version and 5 copies of the revised Working Paper). This working paper shall include the items listed in Tasks 1, 2 and 3. The working paper will include a revised scope of work and detailed project schedule, the public and agency involvement plan, and the stakeholder list.

2. Working Paper 2: Needs and Opportunities (one initial administrative draft in electronic and hard copy format for MAG review; and one electronic version and 5 copies of the revised working paper). This working paper will summarize the data and accomplishments in Tasks 3, 4, 5 and 6, and address all the elements listed in these tasks. Items addressed will include a review of prior studies and a review of commuter rail and other high capacity transit service characteristics; thresholds and performance measures for commuter rail and other high capacity transit operation; travel demand modeling methods and socioeconomic forecast scenarios, and operational commuter rail and high capacity transit modeling system, and an inventory of existing rail facilities and issues associated with operating commuter rail in freight corridors.

3. Working Paper 3: Identification of Alternatives (one initial administrative draft in electronic and hard copy format for MAG review; and one electronic version and 5 copies of the revised Working Paper). This working paper shall include the elements listed in Tasks 7, 8 and 10. Items to be discussed include feasibility of commuter rail in existing corridors and potential changes to land use plans to enhance the feasibility of high capacity transit service; preliminary regional rail network, and alternative high capacity transit service concepts.

4. Working Paper 4: Evaluation of Alternatives (one initial administrative draft in electronic and hard copy format for MAG review; and one electronic version and 5 copies of the revised Working Paper). This working paper shall include the elements listed in Tasks 9, 11 and 12. Included will be ridership, potential revenues and costs of the preliminary regional rail network; evaluation criteria and performance measures, ridership and costs of alternative high capacity transit service concepts; and evaluation and recommended high capacity transit alternatives.

5. Working Paper 5: Regional Commuter Rail/High-Capacity Transit Plan (one initial administrative draft in electronic and hard copy format for MAG review; and one electronic version and 5 copies of the revised Working Paper). This working paper shall include all the elements listed in Tasks 13, 14, and 15. Included will be an integrated high capacity transit network and preliminary operating characteristics; ridership, revenues and costs of the high capacity transit network; and an analysis of opportunities and constraints, action plan and implementation strategies.

6. Final Report. The Final Report (one initial administrative draft in electronic and hard copy format for MAG review; and one electronic version and 5 copies of the revised Final Report) shall summarize the key results of the study in a highly communicative format suitable for different audiences, such as citizens and policy decision-makers. The Final Report shall include an executive summary intended for widespread distribution to diverse audiences.